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The effect of vaginal bleeding and non-spesific pelvic pain on pregnancy outcomes in subchorionic hematomas cases

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ABSTRACT

Objectives: To determine the clinical differences and factors affecting early pregnancy outcome in the first and early second trimester subchorionic hematoma cases.

Material and methods: This study involved with the retrospective analysis and evaluation of 81 cases diagnosed with subchorionic hematoma. The patients were grouped according to the gestational periods, symptoms at the time of admission, ratio of surrounding hematoma to the gestational sac, and whether there was a pregnancy loss. The groups were compared according to the clinical features and pregnancy outcomes.

Results: The ratio of surrounding hematoma to the gestational sac in the group with pregnancy loss was significantly higher ($p = 0.002$). When the cut-off value was 35.5%, it could determine the possibility of a complication in pregnancy with 70% sensitivity and 75% specificity. Nonspecific pelvic pain were significantly higher in the pregnancy loss group than in the other group. Logistic regression analysis was performed to determine the effect of these two parameters on the pregnancy outcome. Although the presence of non-specific pelvic pain is more in the group with pregnancy loss; there was no effect of on pregnancy outcome ($p = 0.141$). The risk of pregnancy loss increased 4.5 fold if the ratio of ScH to gestational sac was above 35% ($p = 0.027$).

Conclusions: In the cases of subchorionic hematoma, we concluded that when the ratio of surrounding hematoma to the gestational sac increased and when it was accompanied by nonspecific pelvic pain, the hospitalization period of the patients increased and the ratio of pregnancy loss was higher.

Key words: subchorionic hematoma; vaginal bleeding; pelvic pain; first trimester; complication

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INTRODUCTION

Subchorionic hematoma (ScH) is defined as a crescent-shaped, echo-free area between the chorionic membrane and the myometrium. The incidence ranges from 1.3% to 3.1% [1]. It is a rare but serious cause of vaginal bleeding that is extremely common in the early gestational weeks. Although its etiology is not known exactly, the increase of assisted reproductive techniques and low-molecular-weight heparin and aspirin use are among the risk factors [2]. It is usually diagnosed in patients admitted due to vaginal bleeding. In addition, non-specific pelvic pain (NsPP), such as low back, groin and around of umbilicus pains may accompany vaginal bleeding. ScH can be diagnosed in routine ultrasonography examinations for asymptomatic patients [3–5]. It is generally classified as small, medium, or large according to the ratio of the diameter of the hematoma to that of the gestational sac [6]. In addition, ScH is also classified according to its surrounding ratio to the gestational sac [7]. In cases with ScH, early pregnancy complications like missed abortion and spontaneous complete or incomplete abortion and late complications of pregnancy, such as premature rupture of membranes, preterm delivery, and intrauterine growth retardation, have been reported to be more frequent [8–10].

In almost all of the previous studies, the effect of hematoma size on early and late pregnancy complications in patients with first trimester period ScH was evaluated. The study evaluating the effect of NsPP on early complications of ScH cases is not available in the literature.

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The aim of this study was to determine the parameters that affect the early pregnancy losses except hematoma size in the first and early second trimester ScH cases. In our current study, we found that pregnancy was more complicated in ScH cases with non-specific pelvic pain.

MATERIAL AND METHODS

The study was approved by the "University Local Ethics Committee" before a retrospective file search was conducted for the study. The archive files, ultrasonography reports, and image records of 684 patients hospitalized with vaginal bleeding in "University Obstetrics and Gynecology Department" between January 2015 and October 2018 were reviewed. We detected total of 106 patients who had ultrasonography reports and visual hematoma measurement records.

A total of 25 ScH cases were excluded from the study which pregnancies without a fetal heartbeat on ultrasonography reports, multiple pregnancies, and pregnancies assisted by supportive reproduction methods. Because, almost all of the pregnancies formed by assisted reproductive technique had a history of using acetylsalicylic acid, low molecular heparin or depot progesterone.

In addition, other pregnant women who developed spontaneous pregnancy but who used acetylsalicylic acid (aspirin), low-molecular-weight heparin and warfarin for another indication were excluded from the study. Demographic data like age, gravida, parity, history of surgery, and pregnancy formation method were obtained from the patients' anamnesis information. In addition, the patients' initial complaints at the time of admission were determined and recorded. In our study, we classified the ScHs according to the surrounding ratio to the gestational sac. We compared the circumference of the entire gestational sac with the gestational sac surface separated from the myometrium, and thus we obtained the inclusion ratio of hematomas in the gestational sac. We indicated the results as a percentage. The ratio of surrounding hematoma to the gestational sac was determined using the Generic Area program on the GE Voluson P8 device. The measurement of subchorionic hematomas is shown in Figure 1. The measurements were evaluated by two obstetricians who were not aware of the study parameters. The other important parameter was NsPP. While evaluating the pain of low back, groin and around of umbilicus during pregnancy, all abdominal organs and musculoskeletal pathologies should be considered [11]. There was no organic pathology to explain the pain we identified as NsPP. Patients with musculoskeletal system, gastrointestinal and urinary tract pathologies were not evaluated as NsPP [12]. In our clinic, three questions are asked in the evaluation of the pain around the groin, waist and umbilicus in the pregnancy.

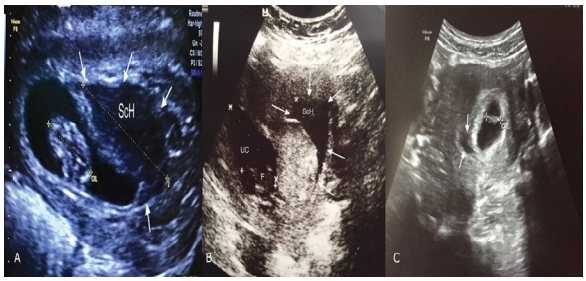

Figure 1. USG measurements of ScHs; **A.** A case of subchorionic hematoma (white arrow) surrounding approximately 50% of the gestational sac; **B.** A case of subchorionic hematoma (white arrow) that surrounds approximately 30% of the gestational sac; **C.** A case of subchorionic hematoma (white arrow) that surrounds approximately 10% of the gestational sac; ScH — subchorionic hematoma; CRL — crown rump length (Fetus); UC — uterine cavity; F — fetus

Are these pains present during pregnancy and are they new?

Do you need analgesics in case of pain?

Do you wake up from your sleep in pain?

NsPP is added to the diagnosis of patients who give a yes response to the first question and either of the other two questions.

A gestational period of 42–98 days was classified as first trimester, while 99–140 days was classified as early second trimester pregnancy. Complications like missed abortion, complete or incomplete abortion, and termination of pregnancy after amnion fluid loss during the treatment before the 20th gestational week were evaluated within the early period pregnancy complication. These pregnancies resulted in loss. Pregnant women who reached over 20 weeks were accepted as the group without early period complications.

The patients were grouped as having vaginal bleeding and having vaginal bleeding + NsPP according to the symptoms at the time of admission. The patients were compared according to the gestational age, hematoma size, early complication status, and priority admission symptoms.

Statistics

The Statistical Package for the Social Sciences, version 15 (SPSS, Chicago, IL) program was used for the statistical analysis. The data were classified as being with or without normal distribution using the Kolmogorov–Smirnov test. Normally distributed data were evaluated using the independent sample t-test, while non-normally distributed data were compared using the Mann–Whitney U test. The Chi-square test was used for categorical variables. The level of statistical significance was set as $p < 0.05$. Receiver operating characteristic (ROC) analysis was performed to determine the efficiency of the ratio of surrounding ScH to the gestational sac in foreseeing the gestational results. Logistic regression analysis was used to determine

the risk factors affecting pregnancy outcome and to calculate odds ratio.

RESULTS

The number of pregnant women who were examined in the first trimester or early second trimester weeks in the University Obstetrics and Gynaecology outpatient clinic was 5.889 during the period included in the study. A total of 106 vaginal bleeding patients were detected. The incidence of vaginal bleeding in our clinic was 11.6%. ScH was detected in 106 patients with vaginal bleeding. The incidence of ScH in patients with vaginal bleeding in our clinic was 15.4%. The patients were treated with similar abortion imminence treatments during hospitalization. In our study, pregnancy loss was detected in 17 (21%) patients. The other 64 (79%) patients did not develop early pregnancy complications, and their pregnancies reached the 20th gestational week. The ratio of surrounding ScH to the gestational sac was statistically lower in the group without pregnancy loss than it was in the group with pregnancy loss (p = 0.002). The factors affecting pregnancy loss are listed in Table 1. First trimester (49–98 days) and early second trimester (99–140 days) pregnancies were compared in terms of the symptoms, hospitalization times, and ratio of surrounding hematoma to the gestational sac. In the first trimester group, 41 (83.7%) patients had vaginal bleeding and 8 (16.3%) had primary symptoms of vaginal bleeding + NsPP. In the early second trimester group, 17 (53.1%) patients had vaginal bleeding and 15 (46.9%) had primary symptoms of vaginal bleeding + NsPP. The difference between the two groups was statistically significant (p = 0.003). The hospitalization period in the first trimester group was statistically lower than that in the early second trimester group (p < 0.001). In the first trimester group, the ratio of surrounding ScH to the gestational sac was statistically lower than it was in the early second trimester group (p = 0.005; Tab. 2). The patients were compared according to the symptoms of vaginal bleeding and vaginal bleeding + NsPP. In the vaginal bleeding + NsPP group, the ratio of surrounding hematoma to the gestational sac, duration of hospitalization, and pregnancy loss were statistically higher (p = 0.002, p < 0.001, p < 0.001, p < 0.001, p < 0.001, respectively). There was no statistically significant effect of maternal age on symptoms in the ScH cases (p = 0.623; Tab. 3). ROC analysis was performed to determine the efficiency of the ratio of surrounding hematoma to the gestational sac in foreseeing gestational results. When the cutoff value was 35.5%, it could determine the prognosis

Table 1. Clinical characteristics of patients according to pregnancy outcomes

Variables		No loss of pregnancies	Loss of Pregnancies	p
n		64	17	
Patients age [year], mean ± SD		26.6 ± 4.7	28.2 ± 4.5	0.222
Gravity n (min–max)		3 (1–5)	4 (1–7)	0.212
Live Children n (min–max)		2 (0–4)	2 (0–4)	0.323
Abortion n (min–max)		0 (0–1)	0 (0–3)	0.296
Pregnancy age [day], mean ± SD		83.5 ± 21.7	96.1 ± 28.3	0.051
Hospitalization time [day], mean ± SD		6.5 ± 3.1	7.9 ± 4.9	0.165
Symptoms N (%)	Bleeding	51 (79.7)	7 (41.2)	0.002
	Bleeding + non-specific pelvic pain	13 (20.3)	10 (58.8)	
GS Surrounded by Hematoma, % mean ± SD		26.0 ± 14.9	39.3 ± 15.5	0.002

SD — standard deviation; GS — gestational sac

Table 2. Clinical outcomes of the patients according to the duration of pregnancy

Variables		First trimester	Early second trimester	p
n		49	32	
Symptom N (%)	Bleeding	41 (83.7)	17 (53.1)	0.003
	Bleeding & non-specific pelvic pain	8 (16.3)	15 (46.9)	
Outcome of pregnancy N (%)	No loss of pregnancy	41 (83.7)	23 (71.9)	0.202
	Loss of pregnancy	8 (16.3)	9 (28.1)	
Hospitalization time (day), mean ± SD		5.2 ± 2.6	9.3 ± 3.4	< 0.001
GS Surrounded by Hematoma, % (mean ± SD)		24.915.4	34.8 ± 4.9	0.005

SD — standard deviation; GS — gestational sac

Table 3. Clinical features of the patients according to the symptoms

Variables	Bleeding	Bleeding + non-specific pelvic pain	p
n	58	23	
GS Surrounded by Hematoma, % (mean ± SD)	22.9 ± 13.1	43.8 ± 11.9	**< 0.001**
Pregnancy Age (day), (mean ± SD)	78.7 ± 21.4	105.0 ± 17.9	**< 0.001**
Patient Age (year) (mean ± SD)	26.8 ± 5.1	27.3 ± 3.8	0.623
Hospitalization time (day), (mean ± SD)	5.8 ± 2.7	9.4 ± 4.1	**< 0.001**

SD — standard deviation; GS — gestational sac

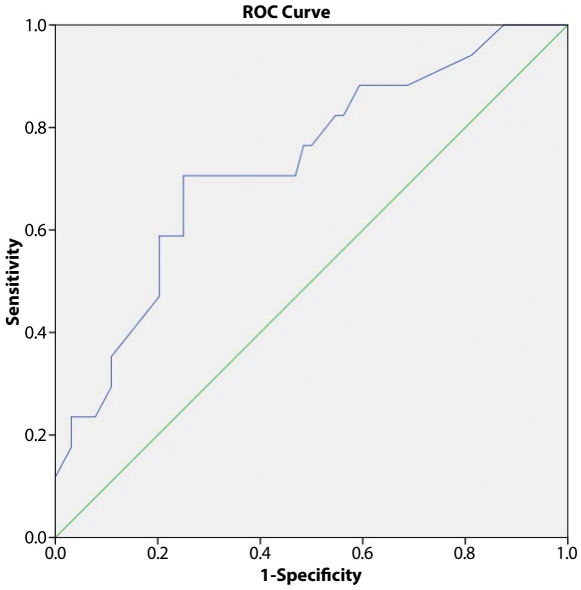

Figure 2. Receiver operating characteristic (ROC) analysis of percentage of subchorionic hematoma surrounding GS in predicting pregnancy outcome. The cut-off value for subchorionic hematoma surrounding GS was 35.5% while the sensitivity and specificity values were 70 and 75%, respectively. Area under the ROC curve (AUC): 0.727, sensitivity: 70%, specificity: 75%, 95% CI: 0.590–0.864, p = 0.004; GS — gestational sac

of negative pregnancy with 70% sensitivity and 75% specificity [Area Under the ROC Curve (AUC): 0.727, sensitivity: 70%, specificity: 75%, 95% CI: 0.590–0.864, p = 0.004; Fig. 2]. In the logistic regression analysis to predict the outcome of pregnancy, the effect of NsPP was statistically insignificant. However, if the percentage of ScH was greater than 35%, the risk of pregnancy loss increased by 4.5 times (Wald: 4.881, Odss ratio: 4.527, 95% CI: 1.186–17.281, p = 0.027).

DISCUSSION

The hematoma diameter is one of the important parameters affecting the clinical outcome in ScH cases [1]. However, we believe that other parameters other than hematoma diameter have important effects on clinical status. In this study, we aimed to evaluate the effects of NsPP on early complications of pregnancy in patients with abortus imminence and subchorionic hematoma. In our current study, we found that pregnancy was more complicated in ScH cases with NsPP. We think that ScHs are often small in the first trimester of pregnancy and complicate pregnancy less, and they appear to occur less frequently in early second trimester pregnancies, but they complicate these pregnancies more. In addition, we think that the hematoma diameter may be larger and pregnancy loss may be higher in pregnant women with NsPP accompanied by vaginal bleeding.

The incidence of vaginal bleeding in our clinic was 11.6%. This result was similar to the literature. In their study, Hasan et al. [13], found that the incidence of vaginal bleeding was 7–25%. In another study with a larger series of cases, Weiss et al. [14], reported the incidence of vaginal bleeding as 14.2%. In our study the incidence of SCH in patients presenting with vaginal bleeding was 15.4%. There is a wide range of data for the incidence of SCH in patients with vaginal bleeding in the literature. In the review of Pearlstone, this rate is stated in a very wide range as 4–22% [15]. This rate suggests that patients presenting with vaginal bleeding should be examined more carefully for ScH. We believe that our article will be the most accurate information providing data to the literature on this subject.

In our study, we found that the higher the ratio of surrounding hematoma to the gestational sac was, the greater the possibility of pregnancy loss became [1, 7, 8, 16]. In their study, Bennett et al. [7], used a subjective evaluation including large, medium, and small values for the ratio of surrounding hematoma to the gestational sac. They reported that the risk of pregnancy loss was three times higher in the group with a greater percentage of hematoma than it was in the other two groups. Bennett et al used a small, medium and large subjective criterion for the diameter of the hematoma. In our study, we reported the size of the hematoma in terms of percentages according to the gestational sac containment.

This numerical value (35.5%) obtained for the ratio of surrounding hematoma to the gestational sac would be more helpful to obstetricians in predicting the outcome of the treatment and complications that may occur in patients with ScH. In the literature, we have found that many studies on ScH were mostly evaluated in the first trimester of pregnancy. In these studies, many similar results have been obtained in first trimester ScH cases related to symptoms, findings, and early and late pregnancy complications [17–19]. However, we could not find any study evaluating the cases of early second trimester ScH. In our clinical experi-

ence, we have seen a significant number of ScHs in the early second trimester of pregnancy. In addition, we observed that the symptoms, clinical findings, and complications were different in these cases after the first trimester. In our study, vaginal bleeding was the most common symptom in first trimester ScH cases. There were no other symptom frequently associated with vaginal bleeding. However, in the early second trimester ScH cases, we found that NsPP was frequently accompanied by vaginal bleeding. In early second trimester ScH cases, with a percentage of hematoma, the duration of hospitalization was longer. In the group with vaginal bleeding and NsPP, pregnancy loss was statistically higher, but in the logistic regression analysis to predict the outcome of pregnancy, the effect of NsPP was statistically insignificant. Although the effect of NsPP on early pregnancy loss is meaningless in logistic regression analysis; we think that clinicians who are evaluating ScHs cases should consider this symptom. The ratio of surrounding hematoma to the gestational sac was found to be significantly higher in early second trimester ScH cases. As this ratio increases, it causes greater separation of the gestational sac from the uterine wall. As a result, inflammatory cell infiltration and inflammatory mediators will occur more around the gestational sac [20, 21]. These inflammatory mediators result in the formation of smooth muscle-tightening molecules, such as prostaglandin I2 and thromboxane A2 [22, 23]. We think that prostaglandin and thromboxane A2 cause NsPP [24]. In addition, the uterus will be larger than normal for the gestational week in cases where the ScH is larger [25, 26]. We think that the stretched visceral peritoneum of the uterus and the inflammatory mediators occurred due to hematoma contribute to the formation of NsPP.

CONCLUSIONS

ScH was more common in first trimester pregnancies, which was found to have a smaller diameter and cause fewer complications in pregnancy. Although ScH was less common in the early second trimester group, it was found to have a larger diameter, so it caused more complications in pregnancy. In addition, in cases of ScH, it should be kept in mind that the hematoma diameter may be larger and pregnancy may be more complicated in cases in which vaginal bleeding is accompanied by NsPP. Furthermore, NsPP cannot be explained for another reason in ScH, should be a stimulant for pregnancy complication. In order to better understand the effect of NsPP on early pregnancy losses, studies with larger case numbers are needed.

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